TRAIL & Landscape

A PUBLICATION CONCERNED WITH
NATURAL HISTORY AND CONSERVATION

TRAIL & LANDSCAPE Vol. 6 No. 3 p. 73-104 Ottawa, May to August, 1972

T R A I L & L A N D S C A P E

Editors: Anne Hanes
18 Briarcliffe Drive,
Ottawa, Ont. K1J 6E4
Joyce Reddoch
Lorraine Smith

Production Staff:
Leone Brown
Barbara Coleman
Harry Thomson

THE OTTAWA FIELD-NATURALISTS' CLUB
- Founded 1879 -

President: Mrs. Sheila Thomson, 2066 Rideau River Dr.
Secretary: Mr. A. W. Rathwell, Can. Wildlife Service

Objectives of the Club: To promote the appreciation, preservation and conservation of Canada's natural heritage; to encourage investigation and publish the results of research in all fields of natural history and to diffuse information on these fields as widely as possible; to support and co-operate with organizations engaged in preserving, maintaining or restoring quality environments for living things.

Club Publications: *THE CANADIAN FIELD-NATURALIST*, devoted to publishing research in natural history. *TRAIL & LANDSCAPE*, a non-technical publication of general interest to local naturalists.

Field Trips, Lectures and other natural history activities are arranged for local members. See inside back cover.

Membership Fees:

INDIVIDUAL MEMBERSHIP:	(per year)	$5.00
FAMILY MEMBERSHIP:	(per year)	$7.00
SUSTAINING MEMBERSHIP:	(per year)	$25.00
LIFE MEMBERSHIP:	(one payment)	$200.00

Subscription (only) to Trail & Landscape $3.00 per year

Apply for Membership (or subscription) to:

THE MEMBERSHIP COMMITTEE,
Ottawa Field-Naturalists' Club,
Box 3264, Postal Station "C",
Ottawa, Ontario, K1Y 4J5

Second Class Mail - Registration #2777

Vol 6 No 3

TRAIL & Landscape

Published by
THE OTTAWA FIELD-NATURALISTS' CLUB
Box 3264 Postal Station C,
Ottawa, Ontario
K1Y 4J5

(Editorial Address: see opposite)

Editorial - - - - - - - - - 74

FON Newspage - - - - - - - - 75

Boom-Log Plant Communities - - - - 76
I. L. Bayly

How's Your Ophediaphobia? - - - - 82

Thorny Trees and Shrubs of the Ottawa Area 84
M. J. Shchepanek

MORE Slender Cliff Brake in the
Ottawa District - - - - - 92
D. F. Brunton

More Butterflies - - - - - - - 94
J. D. Lafontaine

Nature Photography Workshop - - - - 96
L. C. Reedyk

The Natural Areas Committee - - - - 100
D. Oliver

OFNC Summer Program - - - - - - 102

PRINTED ON RECYCLED PAPER TO CONSERVE OUR FORESTS

WE'VE PAID OUR DUES, HAVEN'T WE?

Naturalists are a varied lot. Some drive around all Sunday tabulating bird species seen. Others pour scorn on listers, offer food to bring in birds, and watch from the other (comfortable) side of a window. A few scowl over books and microscopes in pursuit of a special knowledge of nature. Many want only to enjoy it in casual ways. What draws us together, surely, is a conviction that frequent contact with nature, away from a man-made world, is important. Where do we make these precious contacts with nature?

Lucky ones own a private retreat where natural processes are allowed to proceed without human interference. Most of us enjoy nature on public land, and as individuals we have no protective control. Occasionally favourite haunts are cut through by roads or built over. Administrators often manipulate public landscape in the name of improvement, destroying natural values.

Many belong to this club (among other reasons checked on our questionnaire) to assist local conservation of natural areas. Could our club, in fact, do anything to save land from the bulldozer, or prevent destructive "tidying-up" of woodland? I believe we could be effective in protecting natural areas, if our case were strongly presented, well documented, and obviously the view of many persons. To provide this documentation, the NATURAL AREAS INVENTORY was introduced. OFNC members were asked (T&L May 1970) to contribute data on an Inventory Form. Many had good intentions to work on the Inventory, I'm sure, but few forms were returned to the Committee. We can hardly expect effective action by our club until we provide tools to do the job properly.

Let's give it another try. Read about the work of the Natural Areas Committee (p 100) and the Inventory Trips (p 104) in this issue. We can contribute more than dues to our club. While enjoying rambles outdoors, spend a few moments to work toward ensuring that some valuable natural area may remain unaltered for future rambles. ... A. H.

F.O.N. Newspage

THE FEDERATION OF ONTARIO NATURALISTS

Headquarters Move

Mr. Gerald McKeating, Executive Director of the FON, has negotiated with the Holy Trinity development committee for the acquisition of the "Parsonage" at 10 Trinity Square in downtown Toronto. This is in a proposed re-development scheme for downtown Toronto centred around the Holy Trinity Anglican Church on Trinity Square. The Parsonage would have to be moved to another position on the square, and final approval for the sale will have to come from the city.

The move would be an advantageous one for the FON as it would provide more space for offices and the bookshop downtown, and would be closer to Queen's Park.

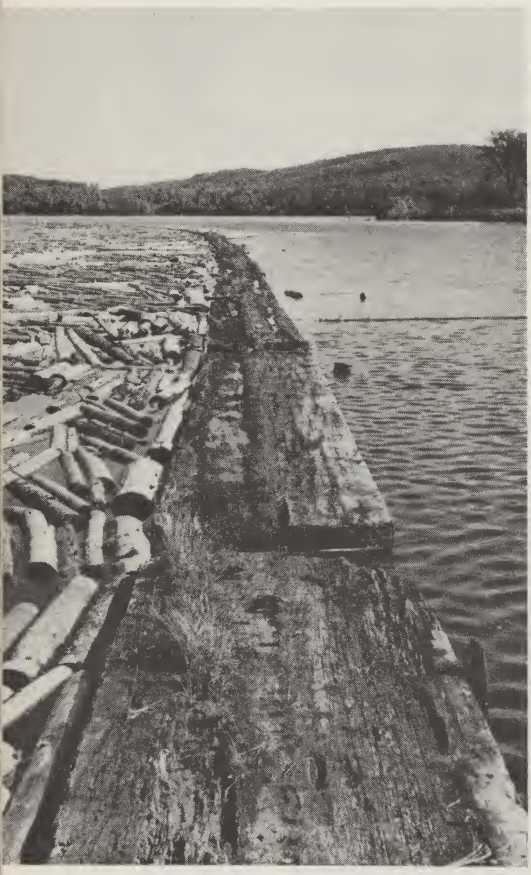
Seminar on Nature Reserves Acquisition

The FON's Nature Reserves Committee conducted a special seminar on nature reserves acquisition March 11 in Hamilton. Don Oliver and Hue MacKenzie from our Club attended and reported to Council that it was a very worthwhile conference.

Lake Louise

The FON believes that the proposed massive development at Lake Louise in Banff National Park will create an urban setting incompatible with the natural environment of the park. Mr. Gerald McKeating presented the FON's views in a brief at the hearings in Calgary March 9th and 10th.

BOOM·LOG



Boom-logs at Cascades, Quebec

Vigorous rushes and marsh St. John's wort, together with sedges on boom-log.

PLANT COMMUNITIES

Isabel Bayly photos: G. C. Bayly

If you are envious of people who are good at the art of bonsai, or if you simply like small things, such as arctic-alpine rockery plants, then these communities will appeal. They are small, readily accessible provided you have a boat or canoe, and you can enjoy them without disturbing them one bit.

Boom-log plants develop, as you might expect, on restraint logs of reasonable age, wherever you find a log-floating operation, or where logs are strung to prevent access. Conditions are something akin to those where trees which border lakes and streams have fallen into the water, and lie there partly exposed for many years. If you have seen such instances, you will know that, with slow decay of the wood, and waterlogging, small plant communities eventually grow on the trunks. Boom-logs can be found wherever there is a need to float logs to pulp mills, but my "favourites" are on the Gatineau River from Cascades to Chelsea, Quebec.

The first question is, where do they come from? Well, so far as the boom-logs themselves are concerned, they originally were native trees of British Columbia; trees such as Douglas fir, western hemlock and western cedar, since British Columbia is the only place in Canada where sufficient quantities of huge squared timbers can be obtained. The boom-logs don't bring the plants with them, because all the species are local. Nor does wind carry them to the logs, since the plants do not have wind-borne seeds and fruits.

This leaves only water or animals as suitable agents of colonization. Birds, particularly herring gulls, do land on logs, but probably they would not account for many plants. Rather, water is likely the exclusive colonization agent for this odd habitat. Plants which have buoyant seeds and fruits can take advantage of the conditions, and their disseminules will be carried along on the current. When storms produce high waves, wave action can then deposit the disseminules on the rough flat surface of the logs. If the logs are sufficiently soft, or at least sufficiently weathered to accept the probing of small germinating rootlets, then the communities are off to a start, albeit an uncertain one.

Conditions under which the communities must live are, to say the least, difficult. First, unlike sheltered fallen tree communities of lakes and streamsides, boom-log plants endure full insolation at all times of day, so there is never any shade. They are also completely unprotected from winds, and storms beat on them so fiercely that many young seedlings are dislodged and swept away. No protection from winter cold comes to them either. When most plants lie dormant beneath a snow blanket, these communities are wind-swept the winter through, so that the upper parts of the plants take quite a beating from the environment. The root systems poke their way between the logs to the river water, although main root growth is usually confined to water-filled spaces between adjacent logs. Here the plants encounter the problem of very dilute nutrients available only from river water (like hydroponic solutions, but of course far more dilute), although the nutrient supply, however small, is continuous. There remains the problem of too much water, and this restricts the species to those which normally grow in bogs, swamps and marshes - all areas of surplus water supply. Nitrogen may also be restricted, partly as the result of slow decay of the logs themselves. Water temperature is never very high in the rapidly flowing river, and this further limits nutrient availability. So you will have to admit, with all these factors going against them, that it is amazing that anything can get a start, much less persist as a reasonably permanent plant community.

Creeping crowfoot, wild iris, cedar trees and mints adorn an old boom-log.

End of boom-log, showing miniature plants, mainly white cedar, alder and mints.

General characteristics of the boom-log plants are extreme miniaturization, sun-redness, and very extensive root systems, heavily matted and intertwined in the spaces between the logs. Some plants, those adapted to nitrogen-deficient areas, seem totally unaffected by the strange habitat, and good examples of these are the sundew (Drosera rotundifolia), twayblade (Liparis loeselii) and the sedge Carex flava. Trees and shrubs are greatly affected. Examples here are alder (Alnus rugosa) in full fruit and only a foot tall; white cedar (Thuja occidentalis) fully mature and with small cones, at a height of under six inches; and sweet gale (Myrica gale) which normally grows up to 5 feet tall, in fruit and perfectly formed at only 15 inches.

There are dozens of spectacular little species growing in this harsh habitat, to mention only a few: water hemlock (Cicuta bulbifera), beggar's ticks (Bidens frondosa and B. cernua), jewelweed (Impatiens biflora), creeping crowfoot (Ranunculus repens), wild iris (Iris versicolor), marsh St. John's wort (Triadenum virginicum) and rushes (Juncus spp.). All are perfect miniatures of their normal relatives, except that the flowers are of normal size, so that in relation to the size of the plant that bears it, the flower seems very large.

These amazing plant communities are well worth searching for in your area, if only to go and see how tenaciously communities can cling to life, and to consider what fantastic odds there are against such communities ever becoming established. They also renew your faith in the power of plants to colonize even the most difficult of habitats, as the boom-log communities so ably demonstrate!

* ** *** *** *** ** *

WE NEED VOLUNTEERS to do some key-punching for the club. If you can help, please phone Hue MacKenzie at 722-8847, or Ellaine Dickson at 729-1554.

Small beggar's ticks (Bidens frondosa) flower in the shelter of a dwarfed iris.

How's your Ophediaphobia?

("SNAKE FEAR ACQUIRED IN CHILDHOOD" reprinted from Newsletter, Ontario Department of Lands & Forests)

People who make a study of human behaviour say that fears (phobias, in the jargon of psychologists) are learned. How do you feel about snakes? If you are less than enthusiastic about the serpent on the path, chances are that your attitude was acquired from your mother, a sister, or a childhood acquaintance.

A growing number of people actually like snakes, and find the study of these animals to be a fascinating and enjoyable pastime. More often, though, human response to a live snake varies from mild aversion to stark terror. In southeastern Asia where between 25,000 and 35,000 people die annually from snake bite, the fear of serpents is a rational one; however, Ontario now has only one poisonous species with a very restricted range, so that fear (as opposed to respect) for snakes is unnecessary. Of the 14 snakes which occur in Ontario, only the Massasauga rattlesnake is poisonous. It is found in some areas within about 30 miles of the Lake Huron-Georgian Bay, Lake Erie and Lake Ontario shores.

In Ontario some snakes, like the eastern smooth green snake, the eastern ring-necked snake, Dekay's snake and the red-bellied snake, do not bite at all.

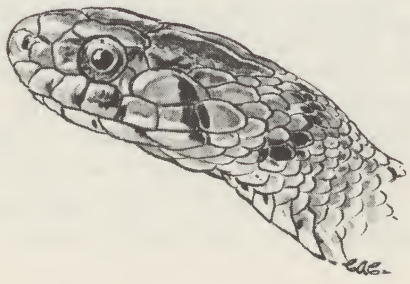
This is also true of the eastern hog-nosed snake, despite its rather formidable appearance. They have been referred to as being "gentle as kittens". This is true; in fact, hog-nosed snakes are a good deal more tractable than many dogs and cats.

Other snakes are often not so charitable to snooping humans. Anyone unwise enough to pick up a large eastern milk snake, eastern garter snake, or (and especially) northern water snake is likely to be rewarded with a good nip on the hand or arm. These snakes have needle-like teeth which are capable of breaking the skin in the fashion of a bite from a small pike. The only treatment necessary is to cleanse the cut with soap and water, apply a little antiseptic, and cover with a dressing.

Fortunately, phobias, including ophediaphobia (fear of snakes) can be licked, and many people have accomplished this. The best way to beat the snake phobia is to take the bull by the horns (in this case, the snake by the tail). A small non-biting species should be selected, and from this point on it is strictly a matter of initial courage and further handling. Apprehension on the part of the handler soon gives way to the more desirable sentiments of interest, respect, and the sense of having accomplished something worthwhile.

Drawings specially prepared for Trail & Landscape from Ontario specimens, by Craig A. Campbell, Waterloo, Ont.

Upper left: SMOOTH GREEN SNAKE
Lower right: LITTLE BROWN SNAKE



THORNY TREES AND SHRUBS

OF THE OTTAWA AREA

by M. J. Shchepanek

Botany Division
National Museum of Natural Sciences
Ottawa

At one time or another most people have encountered trees and shrubs with thorns. Even though the encounter has probably been a painful one, the study of these woody plants can be very interesting. Some of these plants take the shape of individual trees (Canada Plum) while others form low tangled briar patches (Raspberries). The thorns themselves are produced in a variety of shapes and sizes but all have one thing in common. They are sharp pointed. It is this last aspect that has made these types of plants notorious as symbols of punishment and pain. They were never intended for such an inglorious fate but possess thorns as part of environmental adaptations which have evolved, giving the plant the ability to exist in undesirable conditions.

Thorns are a modification found on some plants which tend to limit water loss and are usually characteristic of xerophytic plants (plants which tolerate a dry habitat). These plants produce great amounts of sclerenchyma (a tissue composed of cells which are dead and whose walls are uniformly and heavily thickened with carbohydrates impregnated with lignin, cutin or suberin) to maintain their rigidity during periods

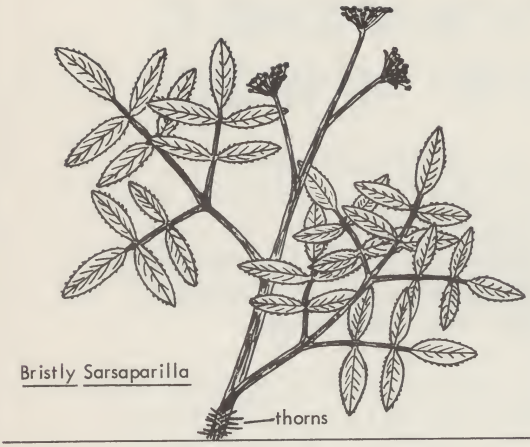
of water loss. The development of sclerenchyma is often accompanied by the production of pronounced spines when it occurs in shoots or on the epidermis of stems and leaves.

Plants without thorns were more desirable to grazing animals and so were gradually eliminated, while those which developed sharp spines thrived. In time, in this way, by "natural selection" those plants which developed pronounced thorns outnumbered and replaced the unarmed ones (for example, the Hawthorns).

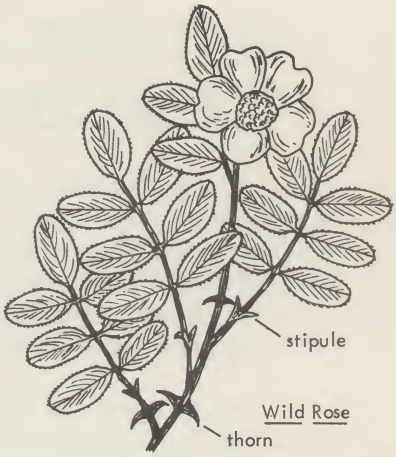
Strong competition among plants on the ground also favoured those which have the ability to utilize sharp projections to assist in climbing (Bittersweet). The sharp spines act as a foothold for these types of plants to climb trees and fences, where their stems may not be rigid enough to keep them upright. All thorny trees and shrubs have thorns derived from either leaves (Barberry) or from shoots (Locusts) to overcome their individual problem of how to exist.

The Ottawa area (commonly referred to as that circular portion of land within a radius of 30 miles from the centre -- the Parliament Buildings) has a good representation of this type of plant. Most of the thorny trees and shrubs in the Ottawa area are native but some have been introduced from other parts of the world and planted in local gardens as ornamentals. Some of these imports have escaped cultivation and have slowly spread to surrounding fields and woodlots where they have become established. These species may now be considered part of the local flora.

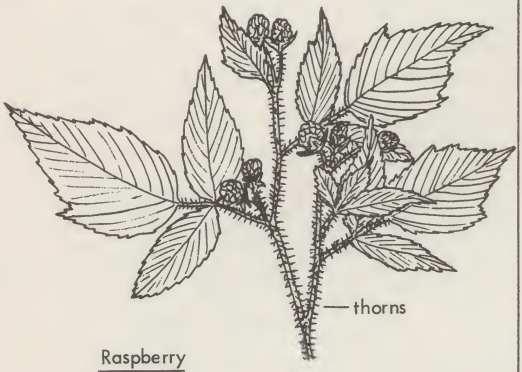
The following is a list with general descriptions of the native and a few introduced species of common thorny trees and shrubs of the Ottawa area:



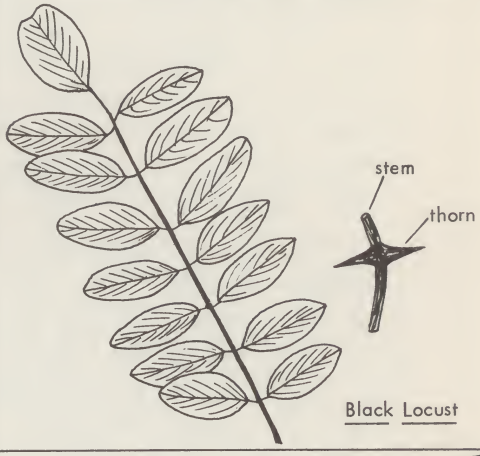
Bristly Sarsaparilla



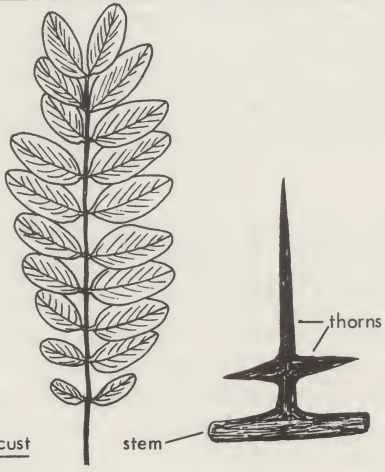
Wild Rose



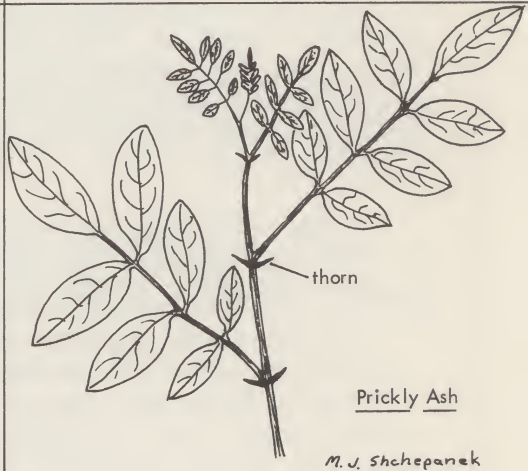
Raspberry



Black Locust



Honey Locust



Prickly Ash

M. J. Shchepanek

BRISTLY SARSAPARILLA (Aralia hispida Vent.) is a perennial shrub growing from a stout rhizome. It is found in rocky or sandy, open, dry, woods and clearings. The STEMS are bristly near the woody base and are up to 3 feet tall. The THORNS are thin and sharp, clustered on the lower part of the stem. The LEAVES are alternate with leaflets arranged on each side of the common axis. The leaflets can be up to 4 inches long, with the margins sharply toothed, and the tip of the leaflets sharp pointed. The FLOWERS are contained in umbels, being small, white to green and occur from June to August. The FRUIT is a black berry with usually 5 small seeds.

WILD ROSES (Rosa spp.) are erect or straggling shrubs, commonly 3-6 feet high. They are found in a variety of habitats and the species hybridize quite readily with each other making identification difficult. The STEMS are woody, upright or rambling, and usually reddish-purple in colour. The THORNS vary from hair-like bristles to sharp, rigid, straight or curved spines. The LEAVES are alternate with the leaflets varying in number from 3 - 11, are simple and not lobed. The stipules are large and attached to the petiole for more than half their length. The FLOWERS have 5 large petals and are pink or red and blossom from May to July. The FRUIT is hard and shaped like a small apple, which becomes pink or red or orange at maturity.

RASPBERRIES and BLACKBERRIES (Rubus spp.) are straggling, prickly bushes commonly 3 - 5 feet high found in open fields and edges of woodlots. The roots are perennial and produce new shoots each year. The STEMS are woody and in their first year do not produce branches or flowers. In the second year, they do not grow in length but produce short lateral branches with a terminal flower. The THORNS, ranging in shape from thin bristles to broad-based erect or incurved spines, are less than 1 inch long. The LEAVES of the first year development are alternate and the leaflets are coarsely and irregularly sharp toothed or slightly lobed. They number 3 - 7, which are 1 - 3 inches in length and are pointed at the tip. The second year leaves are often partly simple and smaller in size. The FLOWERS have 5 petals, usually white or sometimes pink and occur in spring or early summer. The FRUIT is a cluster of drupelets or individual fleshy fruits each containing one seed attached to a central receptacle. The Raspberry fruit separates from the stem leaving the central receptacle on the plant and when ripe is usually red. The Blackberry fruit separates from the stem with the central receptacle included and when ripe is usually black.

HONEY LOCUST (Gleditsia triacanthos L.) is a medium sized tree which commonly grows to a height of 65 feet and has an open, spreading crown. It is found naturally in Southern Ontario but has been planted as an ornamental tree and has escaped cultivation. This tree prefers rich, moist woods. The STEMS are zig-zag in shape, smooth, and brownish with no terminal bud at the branch tips. The THORNS are located just above the leaf scar on the branches and are reddish, rigid, and sharp pointed. They may be branched, two short lateral spines on the main thorn and may extend onto the tree trunk. The LEAVES are about 6 inches long, alternate, and often doubly compound. The leaflets are oppositely arranged (9 - 14 pairs) with no terminal leaflet, are about 1 inch long and minutely toothed on the margin. The FLOWERS are arranged along a central stalk, are greenish - white and appear in early summer. The FRUIT is a thin-flat, dark brown pod which becomes twisted in maturity, containing brown, bean-like seeds. The pod is a foot long and is 1-1/4 inches wide.

BLACK LOCUST (Robinia pseudoacacia L.) is a coarse-barked tree up to 80 feet high. It is native to the slopes of the Appalachians of the Eastern United States but has become naturalized in the Ottawa area through extensive planting as an ornamental. The STEMS are brownish, usually zig-zag in shape and are angular-ridged. The bark is deeply furrowed into irregular ridges. The THORNS are two short broad-based spines located at the base of the leaf stalks. The LEAVES are commonly 9 inches long, singly compound, with an odd number (7-19) of oval shaped, untoothed leaflets. The FLOWERS are pea-like, white, fragrant, appearing in large, showy, drooping clusters in June. The FRUIT is light brown, resembling a pea-pod and is 4 inches long and a half inch wide. The seeds are attached to a central stalk, small, kidney shaped and dull orange-brown with black patches.

PRICKLY ASH (Xanthoxylum americanum Mill.) is an erect, multi-branched, aromatic, shrub which usually spreads to form thickets. It grows to a height of over 10 feet and is found at edges of rich woods and in open places, such as fields, fence-rows, and roadsides. The STEMS are stout and the bark slightly ridged, often reddish to purple, than in maturity turning brown to gray. The THORNS are produced at the base of each leaf and are found in pairs with broad flat bases and sharp points. The LEAVES are alternate, with leaflets arranged on each side of the common axis. The leaf measures up to 10 inches long and has 5-11 leaflets, which measure up to 2-1/2 inches long. The margins of the leaflets are entire or minutely toothed. The FLOWERS are greenish and small, occurring in clusters along the branches and appear in April or May. The FRUIT is a reddish-brown, small, oval pod with an aromatic scent, which contains two glossy, black seeds.

COMMON BUCKTHORN (Rhamnus cathartica L.) is a native of Eurasia but has escaped cultivation and is now found growing wild in the Ottawa area. It is a small tree or shrub growing to 20 feet in height and favors open woods, fields, fencerows, and roadsides. The STEMS are reddish - brown and somewhat ridged. The new shoots are smooth, while the older ones are rough in appearance. The THORNS are short and needle like, usually found at the end of the branches and sometimes on the sides. The LEAVES are mostly opposite and simple, with a maximum length of 4 inches. There are three lateral veins on each side of the mid rib, which strongly curve upward. The leaf margins have minute teeth. The FLOWERS are small and greenish - yellow appearing as dense clusters at the axils of the lower leaves in early June. The FRUIT is like a berry, purplish - black, each one with 3-4 seeds, borne in clusters and ripens in late summer.

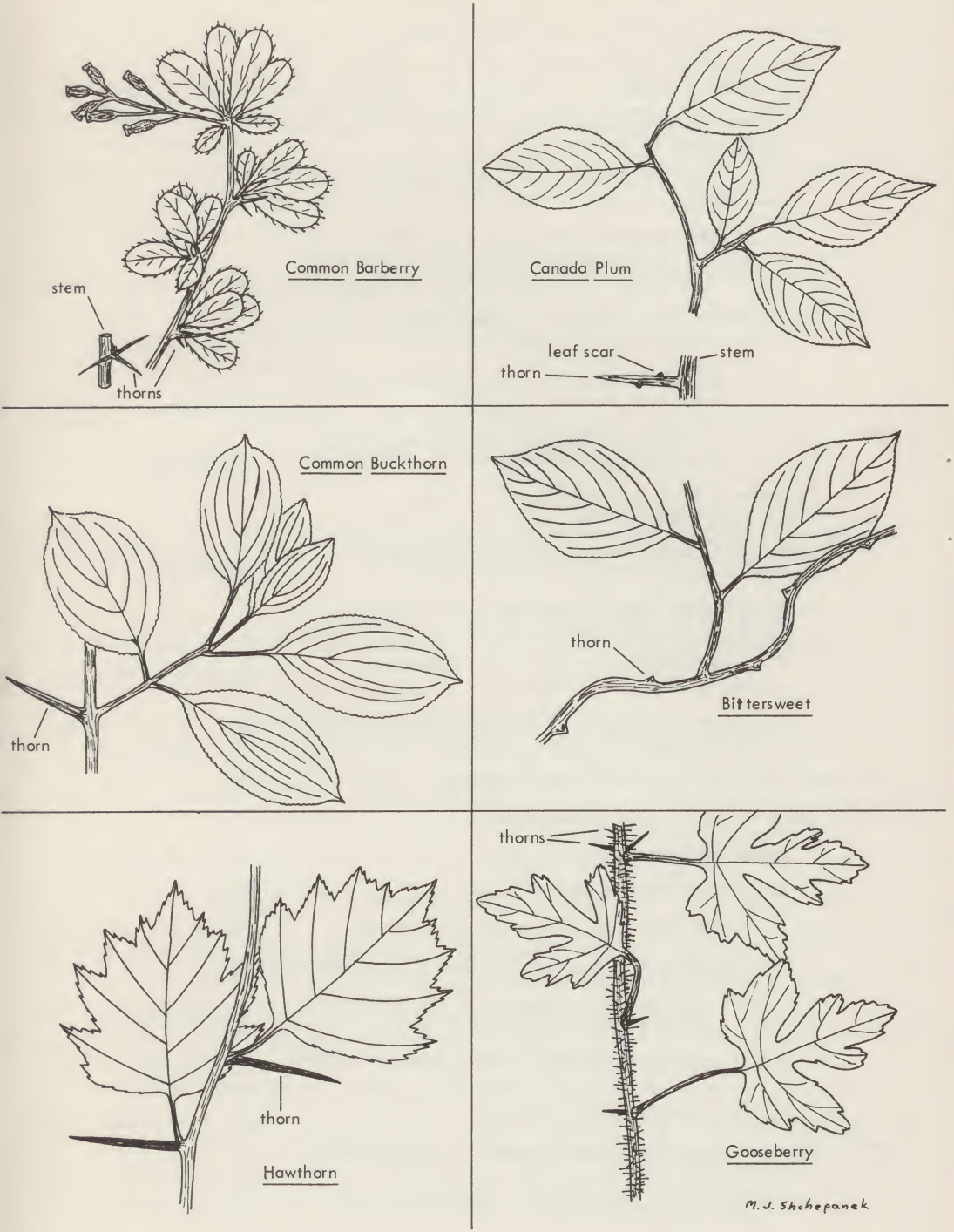
BITTERSWEET (Celastrus scandens L.) is a woody vine or twining shrub with a length of over 30 feet, which creeps on the ground or climbs on trees, shrubs, or fences. It is commonly found in thickets, woods, along river banks, roadsides, and fencerows. The STEMS are slender, green, smooth, flexible, and twining. The bark is dark gray or brown. The THORNS are short and stubby found in alternate arrangement along the woody stem. The LEAVES are alternate, thin, smooth, and light green. The leaf is oval to lanceolate and is pointed at the tip. They are up to 5 inches long and 2 inches wide with margins of finely pointed teeth. The FLOWERS are small, inconspicuous and greenish - yellow, which appear in June. Male and female flowers appear on separate plants. The FRUIT is a pulpy orange - yellow capsule about 1/2 inch across. When ripe, the capsule splits into 3 parts, exposing the deep red coloured seeds.

COMMON BARBERRY (Berberis vulgaris L.) was originally a native of Europe but has escaped and is now growing naturally in the Ottawa area. It is a freely branched, erect shrub up to 8 feet tall, found along roadsides, fences, and in open woods. The STEMS are smooth, gray, and have many spines. The THORNS are found in clusters of three and are small, slender, and sharp pointed. The LEAVES are simple, alternate, and are broader at or above the middle, being 1 to 2-1/4 inches long and 1/2 to 1 inch wide, abruptly pointed at the tip. The margins of the leaf are prominently toothed ending in sharp spines. The FLOWERS, borne in drooping clusters of 10 - 20, are small with yellow petals and appear in late May or early June. The FRUIT is a drooping cluster of bright red berries, ripening in early fall.

CANADA PLUM (Prunus nigra Ait.) is a small straggling tree, up to 30 feet, mainly found as scattered individuals in moist river valleys and in limestone soil on hillsides. The STEMS are crooked, slender, and reddish - brown with a gray - brown bud, up to 1/4 inch in length and found only on the sides of twigs. There is no true terminal bud but it has a small scar at the end of the twig. The bark is black with slightly elongated grayish markings. The THORNS are woody dwarf twigs which have become spur like. The LEAVES are simple, alternate, and broadly oval, up to 5 inches long, doubly toothed with prominent rounded teeth. The leaf narrows abruptly into a long point and is dark green on top and slightly paler on the underside. The FLOWERS have white petals, turning to pink at maturity, 3 or 4 in a cluster on slender red stalks. The petals are about 1-1/4 inches across and appear from mid April to early June. The FRUIT is orange - red and is one inch long, with a large stone (seed) and is edible but usually has a sour taste.

HAWTHORNS (Crataegus spp.) are small trees or shrubs, up to 25 feet, found in open woods and fields. The STEMS have rather a zig-zag appearance and the branchlets usually have two rounded buds at each bend of the twig, side by side. One bud produces a branch while the other a thorn. The THORNS are smooth, shiny, stout and long with rigid, sharp pointed tips. The LEAVES are alternate and simple with the leaf margins being coarsely toothed and usually lobed. The FLOWERS are white or rarely pink and are found in flat - topped clusters on the ends of the short twigs. They appear in May - June. The FRUIT is like a small apple which is red to black with 1 - 5 bony, usually 1 seeded nutlets.

GOOSEBERRIES (including Bristly Black Currant) - (Ribes spp.) are small shrubs growing up to 3 feet in height. The different species of this shrub are found in a variety of habitats throughout the Ottawa area. The STEMS are slender and gray or brown with the outer bark peeling off eventually, especially in the mature plant. The THORNS vary from bristly hairs to short spines. In some species the thorns are few and scattered on the plant while others are densely covered with spines. The LEAVES are palmately lobed (3 or 5 lobes), alternate, and simple. They are 1 - 3 inches in length with margins coarsely toothed. The FLOWERS have 5 petals, usually greenish - yellow, bell-shaped, small and borne in groups of 2 or 3. Bristly Black Currant has deep saucer-shaped flowers borne in slender drooping clusters. The flowers appear in May or June. The FRUIT of Bristly Black Currant is a purple - black berry, borne in drooping clusters, covered with gland-tipped hairs and has a disagreeable taste. The Prickly Gooseberry has a reddish - purple edible berry, covered with long stiff, pale brown prickles. The Wild Gooseberry produces fruit which is an edible, smooth, dark blue - black berry. The fruit of all these plants ripens in late July or August.


Common Barberry
stem
thorns
Canada Plum
leaf scar
stem
thorn
Common Buckthorn
thorn
thorn
Bittersweet
thorns
thorn
Hawthorn
Gooseberry
M. J. Shchepanek

Key to the Thorny Trees and Shrubs of the Ottawa Area

1. Leaves compound (leaf divided into separate leaflets) . . . . . 2.

2. Teeth on margin of leaflets pronounced and sharp pointed; small shrub 2' - 6' high . . . . . 3.

3. Leaves - double compound; bristly spines mainly concentrated on short woody stalk at base of plant . . . . . .Bristly Sarsaparilla

3. Leaves - single compound; spines scattered throughout long woody stem . . . . . .4.

4. Leaflets not lobed; stipules (appendages at base of petiole) are large and are attached to the petiole for more than half their length; fruit hard (like an apple) when ripe . . . . .Wild Roses

4. Leaflets lobed; stipules are long and narrow or bristly; fruit soft and fleshy when ripe . . . . . 5.

5. Fruit commonly red when ripe, separates from the stem without the central receptacle . . . . . Raspberries

5. Fruit commonly black when ripe, separates from the stem with the central receptacle . . . . . Blackberries

2. Teeth minute, blunt, or absent on margin of leaflets; large shrub or tree over 6' high . . . . . 6.

6. No terminal leaflet; leaves commonly double compound; thorns compound, alternate and long (over 1") . . . . . Honey Locust

6. Terminal leaflet present; leaves single compound; thorns simple, opposite and short (less than 1") . . . . . .7.

7. Number of leaflets 7 - 19; terminal leaflet same size and shape as other leaflets . . . . . Black Locust

7. Number of leaflets 5 - 11; terminal leaflet varies in size and shape from the other leaflets . . . . . Prickly Ash

1. Leaves simple (individual leaves attached to stem) . . . . . .8.

8. Leaves not lobed, evenly toothed on margin . . . . . .9.

9. Leaves and thorns oppositely arranged . . . . . Common Buckthorn

9. Leaves and thorns alternately arranged . . . . . .10.

10. Woody vine; thorns when present short and stubby . . . . . Bittersweet

10. Upright shrub or tree; thorns long (over 1/4") and narrow . . 11.

11. Teeth on leaf margins ending in elongated sharp bristles; small shrub less than 8' high . . . . . .Common Barberry

11. Teeth on leaf margins rounded or blunt; tree more than 8' high . . . . . .Canada Plum

8. Leaves lobed, coarsely toothed on margin . . . . . .12.

12. Cleft of leaf lobes shallow in depth; thorns long, narrow, and woody (over 1") . . . . . Hawthorns

12. Cleft of leaf lobes deep in depth; thorns mainly bristles or short spines (less than 1") . . . . . Gooseberries

BIBLIOGRAPHY

Fernald, M.L. 1950 (Eighth edition). Gray's Manual of Botany. American Book Company, New York, N.Y., U.S.A.

Gleason, H.A. 1958 (Second edition). The New Britton and Brown Illustrated Flora. Lancaster Press, Inc., Lancaster, Penna., U.S.A.

Harder, R., Schumacher, W., Firbas, F., and von Denffer, D. 1967 (Second English translation edition).Strasburger's Textbook of Botany. Longman's, Green and Co., Ltd., London, England.

Hosie, R.C. 1969 (Seventh edition). Native Trees of Canada. Department of Fisheries and Forestry, Queen's Printer, Ottawa, Ont., Canada.

Keeler, H.L. 1969. Our Northern Shrubs. Dover Publications, Inc., New YORK, N.Y., U.S.A.

Soper, J.H. and Heimburger, M.L. 1961. 100 Shrubs of Ontario. Dept. of Commerce and Development, Toronto, Ont., Canada.

White, J.H. 1957 (Third edition). The Forest Trees of Ontario. Ontario Dept. of Lands and Forests, Queen's Printer, Toronto, Ont., Canada.

GOING WEST THIS SUMMER? Pack the family and attend the Second Annual CANADIAN NATURE FEDERATION Convention at the University of Alberta in Edmonton, August 19-20-21. Theme: "The Role of the Individual in Environmental Decisions". Site is 2 hours by car from snow-capped Rockies - swim in Jasper's clear mountain lakes or hot springs - hike the trails in a photographer's paradise. Special low accommodation rates on campus; also campsites in and around city. Further information: C.N.F. c/o The Edmonton Natural History Club, Box 1582, Edmonton, Alta.

MORE Slender Cliff Brake

IN THE OTTAWA DISTRICT

D. F. Brunton

This indeed is "the year" for the Slender Cliff Brake fern (Cryptogramma stelleri (S.G. Gmel.) Prantl) in the Ottawa area. Dr. Gillett's recent paper (1971) came out shortly after another new station was found - this time in Quebec.

On October 23, 1971, Don Lafontaine and I were "cliffing" near Wakefield when we found some Cryptogramma in a deep crevice, 50 feet below the top of a 350-foot gneiss cliff which faced southwest. The several clumps noted comprised over 100 plants, and despite the late date, a few fronds were still green, thus enabling specimens to be taken. A duplicate has been given to the Plant Research Institute (DAO). The site is about 3 miles ENE of Wakefield, in Wakefield Township, Gatineau Co. (Lat. 45°40'3"N., Long. 75°52'5"W).

We were not overly surprised at this find, however, for one week previously, on October 14, we had found a small clump (20 to 30 plants) on the west face of King Mountain, Hull Twp., Gatineau Co. This spot (Lat. 45° 29'18"; Long. 75°52'8") was an amazing one, sporting such seemingly out-of-place species as Hackberry and Red Juniper. It probably represents a projection of the site mentioned by Cody (1956) as "...west of King Mountain...".

The two sites showed some striking similarities which could simplify future searches for this species:

(1) In both cases the plants were on different rock material from that composing most of the cliff; in the case of the Wakefield station at least, the rock seemed more calcareous. The occurrence of Cryptogramma on granite or gneiss is rare in southern Ontario, according to Soper (1964) who cites only one record for it being on rock other than limestone in southern Ontario. This obviously is not so applicable in southwestern Quebec.

(2) Both stations were high (over 300 feet) on southwest-facing cliffs, and near the tops of those cliffs.

(3) They were found on ledges and crevices in fractured sections of exposed rock areas, i.e. with no obscuring (or shading) shrubbery.

(4) The most typical accompanying species were: Woodsia ilvensis, Selaginella rupestris, Arabis divaricarpa, and the rare mustard, Draba (D. lanceolata Royle, at King Mountain; the Wakefield material as yet undetermined).

(5) Both sites were so precariously situated that only a mountain goat or naturalist would be so foolish as to attempt to reach them!

We unintentionally struck gold on two successive attempts (we were actually looking for a different species of fern altogether). This leads one to suspect that it is more a case of botanically-minded mountain goats being rare in the District, than Cryptogramma stelleri!

Literature Cited

Cody, W.J. 1956 The Ferns of the Ottawa District. Can. Dept. Agric. Publ. 974, Queen's Printer, Ottawa.

Gillett, J.M. 1971 Two New Ottawa District Stations for Slender Cliff Brake. Trail & Lands. 5:5 (130-132).

Soper, J.H. 1964 The Slender Cliff Brake. Ontario Naturalist 2:2 (120-123).

BUCKEYE M. Parker

MORE

In 1968 I published in Trail & Landscape an annotated list of the butterflies of the Ottawa Region. The present article includes five old records omitted in 1968, two species of which have reappeared, and in addition two new records. These seven additions bring the total to 90 species.

1 Boloria eunomia dawsoni (Barnes & McDunnough) BOG FRITILLARY

This butterfly is known only from the Mer Bleue and has not been seen since 1908 when four were collected. It has been assumed that this species no longer occurs there, but it could easily be missed in such a large bog, for it flies only a few days each year in mid-June.

2 Boloria freija freija (Thunberg) FREIJA FRITILLARY

This Freija fritillary has been collected only once in the Mer Bleue by C.H. Young on June 6, 1911. It has a subarctic distribution occurring generally far north of Ottawa. The next closest record is from Timagami, Ontario, 200 miles to the northwest. It seems more likely that there was (is?) a colony in such ideal habitat as the Mer Bleue, than that it strayed down from the north.

3 Precis lavinia coenia (Huebner) BUCKEYE

The only record of a Buckeye from Ottawa is one collected by Bruce MacTavish near Merivale Gardens (about June 1966). It should be watched for, particularly where Gerardia is common.

4 Eurema nicippe (Cramer) SLEEPY ORANGE

This southern species is uncommon 300 miles south of Ottawa. A worn specimen was collected in Ottawa by W.E. Saunders about 1900. It is not likely to occur again.

by J. D. Lafontaine

BUTTERFLIES

OLYMPIA H. A. Thomson

5 Eurema lisa Boisduval & LeConte LITTLE SULPHUR

Occasionally this butterfly migrates in numbers and has wandered to the Ottawa area. Several were collected about 1900. The next occurrence was in late June and early July 1968 when numerous individuals were found in four localities around Ottawa. They have probably been overlooked during periodic movements recorded in other parts of Ontario in the intervening years.

6 Pieris p. protodice Boisduval & LeConte CHECKED WHITE

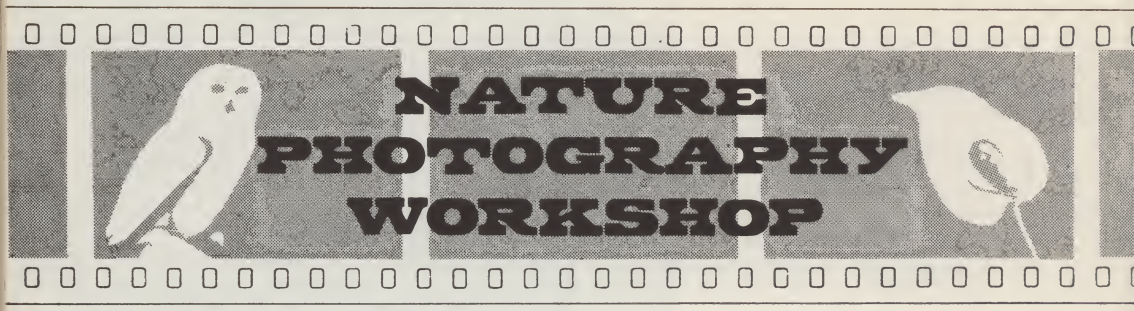
Occurs in numbers to our north and south but has turned up here only four times. These were in 1901, 1905, 1938 and 1966. Records range from July 22 to Sept. 27.

7 Polites v. verna (Edwards) LITTLE GLASSY WING

This skipper is usually found well to the south of Ottawa but a male was carefully examined by Anne Hanes and Sheila Thomson on June 27, 1970 and identified as this species.

In addition, an OLYMPIA (Euchloe olympia rosa Edwards) was found by Anne Hanes north of our area near Fort Coulonge on May 29, 1971. It was photographed by H. A. Thomson. This is the first record for Quebec. It should be watched for in old fields where Rock Cress (Arabis spp.) is common.

Several members of the OFNC are now becoming familiar with the local butterflies by identifying and photographing specimens caught and released. Some of the records discussed above were obtained in this way. This is an excellent way for you to familiarize yourself with a new intriguing field of study and also contribute valuable information. If you feel you have identified an unusual butterfly in your net, make notes and photograph it, or take it to an experienced collector.



PICTURING HUMMERS WITH COLOUR FILM

According to my observations, the fun of photographing hummingbirds may be started in the second half of May when handsome Mr. Hummer, Archilochus colubris, with his ruby throat, comes to stake out his territory. A week or a fortnight from then we can expect the arrival of his mate; not so conspicuous, but pretty, and an example of perfect motherly care. It was easier for Eric the Viking to discover the east coast of this country than for us to find Mrs. Hummer's nest. I never have found one. The size of her territory depends on the nectar-producing blossoms. So if you are interested in picturing these birds with colour film (and by preference with Ektachrome-X film) there is still time to grow plants with the appropriate nectar-producing flowers: columbines, delphiniums, monardas, sweet williams, gladiolas, nicotianas, scarlet runner beans, and for next year a vine of honeysuckle. Because when you start to do this kind of photography you will definitely continue it for a couple of summers to really enjoy the fun of it. During the coming summer you might be able to put a couple of sprigs of blooming honeysuckle in a vase on a small table or pedestal not too far from flower beds in your garden. Scarlet runner beans are a must; besides having a tasty vegetable for yourself, hummers like to sample their scarlet blossoms for nectar.

Most female hummers collect nectar along an invariable route keeping a fairly regular time schedule. In the summer of 1969 my particular hummer - which I called "grandmother" because she looked so very old - arrived every 18 or 20 minutes at a bed of monardas, and after that at all the other flowers in our little garden in

Rawdon, Quebec. She even talked French when I came too close, saying "petitereteetepetite". To make it comfortable for me the camera on tripod was set up some 8 or 10 feet from my chair and in front of the camera a small table with a vase to contain a certain blossom. Hummingbirds are curious and will not fail to come and inspect that single blossom for nectar. Change to other kinds of blossoms a couple of times every day. According to some books Archilochus colubris is attracted to red blossoms. I discovered that this is not a rule of thumb. They will approach every nectar-producing flower.

And now for the techniques, according to my experience. Focus the camera (on a sturdy tripod) with a 100 mm or 135 mm lens at a single blossom at distances varying from 20 to 10 inches, while using one or two close-up attachments on the above-mentioned lenses, and at distances according to the following focusing tables.

FOCUSING TABLE FOR 100 MM LENS WITH CLOSE-UP LENSES

close-up lenses	size of subject	at distance	depth of field at: f/8	f/11	f/16	f/22
1 diopter	4" x 6"	19-1/2"	3/4"	1-1/4"	2"	3"
2 diopter	4-1/4" x 7"	20"	1"	1-1/2"	1-1/2"	2-1/4"
to:	2-1/2" x 4"	13-1/4"	3/8"	3/8"	1/2"	1"
1+2 diopter	3" x 4"	13-3/8"	3/8"	1/2"	7/8"	1-1/4"
to:	2" x 3"	9-7/8"	3/8"	3/8"	1/2"	3/4"

FOCUSING TABLE FOR 135 MM LENS WITH CLOSE-UP LENSES

close-up lenses	size of subject	at distance	depth of field at: f/8	f/11	f/16	f/22
1 diopter	5-1/2" x 8-1/4"	31-1/2"	1"	1-1/2"	2"	3"
2 diopter	3-3/8" x 5-1/2"	19-3/4"	1/2"	3/4"	1-1/4"	1-3/4"
to:	3" x 4-5/8"	17-1/2"	1/2"	3/4"	1"	1-1/4"
1+2 diopter	2-1/2" x 3-3/8"	13-1/4"	3/8"	1/2"	3/4"	1"

B & W print by E. Amey from colour slide by L.C. Reedyk

STOP PRESS

"Gatineau Park - a proposal for its conservation and use" is the 54 page, illustrated brief presented to the NCC in Feb. by the Nat. & Prov. Parks Assoc. of Can. Half of the brief describes the natural, human, and political history of the park, and half is devoted to specific proposals for its use. An 18" x 45" fold-out map is included. Copies (in English or French) are $2.00 + .25 postage, and can be obtained from: Dr.I.M.Brodo, 28 Benson St.,Ottawa K2E 5J5.

Needless to stipulate, one has to trip the shutter by remote control. The different types of remote control gadgets have been described by Miss Charlotte Dill on page 29 of T&L Vol 6 No 1. To freeze the movement of hummers' wings when hovering in front of a blossom one has to mount an electronic flash on the camera. Therefore it is necessary to use a camera with a blade shutter and a shutter speed of 1/250 or 1/500 second in order to eliminate a double image. I use a Bauer Ultrablitz-CORNET 150 which gives me a flash duration of approximately 1/3700 second. Nowadays one could also use a Bauer Ultrablitz E200 which allows a flash duration of 1/40,000 second at a distance of 2 feet, but only with a lens opening of f/5.6 when using Kodak Ektachrome-X film, which does not give much depth of field.

Hummers like to relax perching on a very thin twig. That makes it possible to photograph the bird sitting pretty. Just stick a lilac shoot in the ground near a bed of flowers. The lilac shoot should have a side branch as thin as a match stick and not longer than 3 inches, which gives you an opportunity to focus on the bird at a distance of 18 or 19 inches in a frame of $3\frac{1}{2}$ x $5\frac{1}{2}$ inches.

Fortunately hummers do not mind the flash, but they get scared by the noise of the shutter although the above-mentioned "grandmother" got used to it and she even made a landing on my flashgun to scrutinize the cause of that noise - or was it the faint "beep" of the electronic flashgun? As already mentioned hummers are very curious, and when "grandmother" and I met for the first time she hovered in front of my glasses at a distance of a foot. We looked each other over, and I hope to mutual satisfaction. Using a fully charged flashgun allows you to work only a couple of hours before you have to recharge the nickel cadmium battery. Therefore it is better to connect the flashgun to a power outlet which gives you the use of the flashgun as long as you like. Finally there is one item you need and cannot buy with money, which happens to be: P A T I E N C E and lots of it. Good Luck.

Ottawa, February 7, 1972 Leonard C. Reedyk

THE NATURAL AREAS COMMITTEE

The Natural Areas Committee was formed in 1968 and given the following terms of reference:

1 - to identify and survey areas in the Ottawa Valley which should be conserved;

2 - to establish and maintain communications with other natural history societies in the National Capital Area.

A brief was presented to the Planning Department of the Regional Municipality of Ottawa-Carleton in 1970 which identified 19 areas in the Municipality that should be conserved. This summer, members of the Natural Areas committee plan to survey four of these areas -- Carp Hills, Mer Bleue, and areas near Manion Corners and Constance Bay. To ensure that a natural area is preserved we must do more than just identify it. We must know its natural populations, the rare and interesting species living there and its scenic values, to present an effective case for conservation.

There are a number of ways that you as an individual club member can help the Natural Areas Committee in its work; it is one way to become involved in the activities of the Club. We need help in carrying out the surveys outlined above. We need people to organize and carry out surveys in other areas of the Ottawa Valley. You may not have the time nor wish to be involved in an organized survey; however, you probably know of an area worthy of conservation in the Ottawa Valley - on either side of the Ottawa River. Let us know about the area. To identify areas is our first objective. An area does not have to be large to be worthy of conservation. It can be a small woodlot or bog inhabited by a few interesting species. Write down what you know about the area using the following outline as a guide, and send it to this address:

Don Oliver,
Chairman, Natural Areas Committee
#1005 - 270 Somerset St. W.
Ottawa, Ont. K2P 0J7
phone 237-2098

Outline for a NATURAL AREAS REPORT

Name of Area - preferably official name
Location - sketch-map, verbal description, size
Landscape - general verbal description, sketch-map including topography, general vegetation pattern, water, etc.
Reasons for Report - most impressive and/or important features for observer.
- specific floral, faunal or landscape features of note
- general evaluation of importance and value of area.
Further comments - pressures on area now
- future danger to area
- any other information such as ownership if known
What did you see? list birds, plants, animals, other groups
Observer - name, address, and phone number

DON'T TAKE OUR LIVES
When you take our picture!
PHOTOGRAPHERS, PLEASE:
Be quick about it, so Mom will come back soon with our dinner.
Replace branches you've tied back for a clear view or better lighting. Don't CUT them away because the sun could fry us!
Don't leave a SCENT TRAIL for a weasel to follow to our nest. Keep your distance!
Take used flashbulbs and film wrappers to a trash bin. Leave our woods as clean as you found it - or cleaner.
LET US GROW UP TO DELIGHT YOU WITH OUR SONG AND COLOUR
AH

Summer Program

Arranged by the Excursions and Lectures Committee
Ewen C. D. Todd (225-4316), Chairman

MAY EARLY MORNING BIRD WALKS

VINCENT MASSEY PARK

Saturday 6 May — Leader: Arnet Sheppard (722-0991)
" 13 " — " Don Lafontaine (722-1692)
" 20 " — " Loney Dickson (729-1554)
" 27 " — " Roger Taylor (731-9270)

Meet: Vincent Massey parking lot by Heron Road bridge
Time: 7:30 a.m.

RAMSAYVILLE

Sunday 7 May — Leader: Monty Brigham (728-0855)
" 14 " — " Hue MacKenzie (722-8847)

Meet: Anderson Road at the CNR tracks north of Russell Road
Time: 7:00 a.m. (group will be in general vicinity of meeting place for at least 30 mins.)

RIDEAU TRAIL

Saturday 13 May — Leader: Stephen O'Donnell (836-4172)
Sunday 28 May — " " "

Meet: Jack Pine Nature Trail parking lot on Moodie Drive
Time: 7:00 a.m.

DUNROBIN

Saturday 20 May — Leader: Roger Foxall (745-7791)
" 27 " — " " "

Meet: Dunrobin Marsh Bridge. Take Constance Bay Road (County Road No 9) to Dunrobin, turn right (north) in village to bridge.
Time: 7:00 a.m.

On both days leader will also lead Dawn Chorus walk (owls, whippoorwills, thrushes, etc) Meet at 4 a.m. Take Constance Bay road off Hwy 17, turn first right (County Rd No 109) and to right again past the RR tracks. Contact leader if you intend to go - may be cancelled if weather unsuitable.

MAY AND JUNE EVENING WALKS

Informal walks of general interest - birds, plants, animals and insects - at 6:30 p.m. weather permitting.

Wednesday	HOG'S BACK PARK
3 May	Leaders: Janette Dean (224-9474) and Mary Stuart (737-5677)
	Meet: Hog's Back parking lot
	This trip will be mainly for rocks and scenery
Tuesday	ROCK GARDEN OUTING
9 May	Leader: Trevor Cole (729-7947)
	Meet: Rock Garden parking lot, Experimental Farm
Wednesday	BRITANNIA
24 May	Leaders: Arnet Sheppard (722-0991) and Loney Dickson (729-1554)
	Meet: Filtration Plant
Wednesday	JACK PINE NATURE TRAIL
7 June	Leaders: Stephen O'Donnell (836-4172) and Bruce MacTavish (825-1502)
	Meet: Carlingwood Plaza, southwest corner
Thursday	DOLMAN RIDGE
15 June	Leaders: Roger Foxall (745-7791) Don Lafontaine (722-1692)
	Meet: Anderson Road at CNR tracks north of Russell Road

TALK ON MACOUN CLUB CANOE TRIP TO ALGONQUIN PARK

A slide-illustrated presentation on last August's trip to the Park

Wednesday	Leaders: Loney Dickson (729-1554),
17 May	Jon Field, Peter Fournier
	Meet: St. Andrew's Presbyterian Church, Kent & Wellington, Kent St. door
	Time: 8:00 p.m.

WALKS TO STUDY BREEDING BIRDS

Two walks to study and to relate to habitat the breeding bird populations in different areas of the Ottawa Region. The first will concentrate on the habitats typical of the southern part of the area, e.g. farmlands, small woodlots and marshes. The second will be through the more extensive coniferous, deciduous and mixed forest areas in the north.

Sunday	Leader:	Roger Foxall (745-7791)
11 June	Meet:	as for Ramsayville walks
	Time:	6:00 a.m. BRING LUNCH
Saturday	Leader:	Monty Brigham (728-0855)
24 June	Meet:	East parking lot, NRC, 100 Sussex Drive
	Time:	5:00 a.m. BRING LUNCH

Saturday 24 June — ORCHIDS AND MARSH PLANTS

Leaders: Charlotte Dill (749-1575) and Anne Hanes (749-2400)

Meet: Carlingwood Plaza, nr. Post Office

Time: 8:30 a.m.

All day trip to White Lake area; bring lunch and be prepared for wet ground.

INVENTORY TRIPS

The Natural Areas Committee is holding two Inventory field trips this summer, to determine the natural history values of Manion Corners and the Carp Hills. Both areas have wildlife of interest, but detailed surveys have not been carried out. The purpose of these trips will be to note plants, insects, breeding birds and other life of scientific and educational interest. If you feel you can contribute, please contact the appropriate organizer. Participants should bring a pad for notes, whistle and compass, and a basic knowledge of some aspect of natural history. However, you do not need to be an expert to help. Finding out this kind of information is an important aspect of the Club's activities and needs every support if we are to preserve our natural areas.

(O F N C Summer Program begins on page 102)

Saturday 8 July — INVENTORY FIELD TRIP TO MANION CORNERS
Organizer: Don Lafontaine (722-1692)
Meet: Carlingwood Plaza, opp. Loblaw's
Time: 8:45 a.m.

Contact leader before 6 July. All day trip; bring food. The habitat is wet; dress accordingly.

Saturday 15 July — INSECT OUTING
Leader: Ossie Peck (234-4959)
Meet: Health & Welfare Bldg.
Tunney's Pasture
Time: 10:00 a.m.

Bring lunch. All interested phone leader by 13 July

Saturday 22 July — A WETLANDS FIELD TRIP
Leader: Isabel Bayly (827-2369) and
Bessie Tant (733-9672)
Meet: Health & Welfare Bldg.
Time: 9:00 a.m.

Morning trip to study the ecology of plant life in a variety of wet areas in the Gatineau.

Saturday 29 July — INVENTORY TRIP TO THE CARP HILLS
Organizer: Hue MacKenzie (722-8847)
Meet: Carlingwood Plaza, opp. Loblaw's
Time: 8:45 a.m.

Contact leader before 27 July. All day trip; bring food. Habitat is mixed woodland, rock and marsh.

Saturday 19 August — CONSTANCE BAY FIELD TRIP
Leaders: Jack Gillett (224-2843) and
Ewen Todd (225-4316)
Meet: Britannia Drive-In
Time: 10:00 a.m.

Plants and insects of the Ottawa shoreline and sand dunes. The most interesting plants will be rushes, sedges, grasses and Compositae.

Sunday 27 August — EARLY FALL BIRD MIGRANTS
Leader: Bruce MacTavish (825-1502)
Meet: Britannia Drive-In
Time: 7:00 a.m.

T R A I L & L A N D S C A P E

published by

THE OTTAWA FIELD-NATURALISTS' CLUB

Second Class Mail - Registration Number 2777
Postage paid in cash at Ottawa

Change of Address Notices and undeliverable Copies:
Box 3264 Postal Station C, Ottawa, Ont.
K1Y 4J5
Return postage guaranteed

Lithographed by
John Marquardt, Printer